

## Claims

1. A recording method which determines an optimum recording power value by performing test writing  
5 on a test zone of a recording medium and records information on the recording medium with the determined optimum recording power, wherein the recording medium is a multilayer recording medium having a plurality of recording layers within one recording surface; the test  
10 zone is formed on each recording layer; and when information is to be recorded on a target recording layer that is second or further from a light source, information is recorded on a portion, which portion is positioned in a same recording surface area as that of  
15 the test zone, of an upper recording layer that is closer to the light source than the target recording layer before the test writing is performed on the test zone in the target recording layer.

20 2. A recording method which determines an optimum recording power value by performing test writing on a test zone of a recording medium and records information on the recording medium with the determined optimum recording power, wherein the recording medium is  
25 a multilayer recording medium having a plurality of

recording layers within one recording surface; the test zone is formed on each recording layer; the test zones in different recording layers are positioned so as not to overlap in a same recording surface area; and when  
5 information is to be recorded on a target recording layer that is second or further from a light source and information has already been recorded on an upper recording layer that is closer to the light source than the target recording layer, information is recorded on a  
10 portion, which portion is positioned in the same recording surface area as that of the test zone, of the upper recording layer before the test writing is performed on the test zone in the target recording layer.

15 3. A recording method which determines an optimum recording power value by performing test writing on a test zone of a recording medium and records information on the recording medium with the determined optimum recording power, wherein the recording medium is  
20 a multilayer recording medium having a plurality of recording layers within one recording surface; the test zone is formed on each recording layer; the test zones in different recording layers are positioned so as not to overlap in a same recording surface area; and when  
25 information is to be recorded on target recording layers

one by one, the test writing is performed on the test zone in the corresponding target recording layer before each information recording, in which, before the test writing is performed on the test zone in each of the  
5 target recording layers that are second or further from a light source, information is recorded on a portion, which portion is positioned in the same recording surface area as that of the test zone, of a respective upper recording layer that is closer to the light source  
10 than each of the target recording layers that are second or further from a light source.

4. The recording method as claimed in claim 2, wherein, when information is to be recorded on the  
15 target recording layer that is second or further from the light source and information has not been recorded on the upper recording layer that is closer to the light source than the target recording layer, the test writing is performed on the test zone in the target recording  
20 layer without recording information on said portion.

5. A recording method which determines an optimum recording power value by performing test writing on a test zone of a recording medium and records  
25 information on the recording medium with the determined

optimum recording power, wherein the recording medium is a multilayer recording medium having a plurality of recording layers within one recording surface; the test zone is formed on each recording layer; the test zones  
5 in different recording layers are positioned in a same recording surface area; and when information is to be recorded on a target recording layer that is second or further from a light source, information is recorded on the test zone which is in an upper recording layer  
10 closer to the light source than the target recording layer and is positioned in the same recording surface area as that of the test zone in the target recording layer before the test writing is performed on the test zone in the target recording layer.

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6. The recording method as claimed in claim 5, wherein the information recording on the upper recording layer closer to the light source than the target recording layer is performed, before the test writing on  
20 the target recording layer, only on a portion, which portion is used to perform the test writing once, of the test zone in the upper recording layer; and the subsequent test writing for the target recording layer is performed on another portion, which other portion is  
25 positioned in a same recording surface area as that of

said portion, of the test zone in the target recording layer.

7. The recording method as claimed in claim 5,  
5 wherein the information recording on the upper recording layer closer to the light source than the target recording layer is performed, before the test writing on the target recording layer, on an entire area of the test zone in the upper recording layer.

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8. The recording method as claimed in claim 5,  
6, or 7, wherein after information is recorded on the upper recording layer closer to the light source than the target recording layer before the test writing on  
15 the target recording layer, indicator information indicating a zone where said information recording has been performed is recorded in a count zone of the recording medium.

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9. A recording apparatus which determines an optimum recording power value by performing test writing on a test zone of a recording medium and records information on the recording medium with the determined optimum recording power, wherein the recording medium is  
25 a multilayer recording medium having a plurality of

recording layers within one recording surface and the test zone is formed on each recording layer, comprising:

a preprocessing unit which, when recording information on a target recording layer that is second  
5 or further from a light source, records information on a portion, which portion is positioned in the same recording surface area as that of the test zone in the target recording layer, of an upper recording layer that is closer to the light source than the target recording  
10 layer; and

a test writing unit which, after the recording on the upper recording layer, performs the test writing on the test zone in the target recording layer.

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10. A recording apparatus which determines an optimum recording power value by performing test writing on a test zone of a recording medium and records information on the recording medium with the determined  
20 optimum recording power, wherein the recording medium is a multilayer recording medium having a plurality of recording layers within one recording surface, the test zone is formed on each recording layer, and the test zones in different recording layers are positioned so as  
25 not to overlap in a same recording surface area,

comprising:

a preprocessing unit which, when recording information on a target recording layer that is second or further from a light source and information has  
5 already been recorded on an upper recording layer that is closer to the light source than the target recording layer, records information on a portion, which portion is positioned in the same recording surface area as that of the test zone in the target layer, of the upper  
10 recording layer; and

a test writing unit which, after the recording on the upper recording layer, performs the test writing on the test zone in the target recording layer.

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11. A recording apparatus which determines an optimum recording power value by performing test writing on a test zone of a recording medium and records information on the recording medium with the determined  
20 optimum recording power, wherein the recording medium is a multilayer recording medium having a plurality of recording layers within one recording surface, the test zone is formed on each recording layer, and the test zones in different recording layers are positioned so as  
25 not to overlap in a same recording surface area,

comprising:

a test writing unit which, when recording information on target recording layers one by one, performs the test writing on the test zone in the  
5 corresponding target recording layer before each information recording; and

a preprocessing unit which, before performing the test writing on the test zone in each of the target recording layers that are second or further from a light  
10 source, records information on a portion, which portion is positioned in the same recording surface area as that of the test zone, of respective upper recording layer that is closer to the light source than each of the target recording layers that are second or further from  
15 a light source.

12. The recording apparatus as claimed in claim 10, wherein the test writing unit, when recording information on the target recording layer that is second  
20 or further from the light source and information has not been recorded on the upper recording layer that is closer to the light source than the target recording layer, performs the test writing on the test zone in the target recording layer without having the preprocessing  
25 unit record information on said portion.



13. The recording apparatus as claimed in claim 9, wherein the preprocessing unit, in the information recording on the upper recording layer  
5 closer to the light source than the target recording layer before the test writing on the target recording layer, records information only on a portion, which portion is used to perform the test writing once, of the test zone in the upper recording layer; and the test  
10 writing unit performs the subsequent test writing for the target recording layer on another portion, which other portion is positioned in a same recording surface area as that of said portion, of the test zone in the target recording layer.

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14. The recording apparatus as claimed in claim 9, wherein the preprocessing unit, in the information recording on the upper recording layer  
closer to the light source than the target recording  
20 layer before the test writing on the target recording layer, records information on an entire area of the test zone in the upper recording layer.

15. The recording apparatus as claimed in  
25 claim 13 or 14, wherein the preprocessing unit, after

recording information on the upper recording layer closer to the light source than the target recording layer before the test writing on the target recording layer, records indicator information indicating a zone  
5 where said information has been recorded in a count zone of the recording medium.

16. A computer-readable storage medium having a program embodied therein for causing a computer, which  
10 makes a recording apparatus determine an optimum recording power value by performing test writing on a test zone of a recording medium and record information on the recording medium with the determined optimum recording power, wherein the recording medium is a  
15 multilayer recording medium having a plurality of recording layers within one recording surface and the test zone is formed on each recording layer, to function as:

a preprocessing unit which, when recording  
20 information on a target recording layer that is second or further from a light source, records information on a portion, which portion is positioned in the same recording surface area as that of the test zone in the target recording layer, of an upper recording layer that  
25 is closer to the light source than the target recording

layer; and

a test writing unit which, after the recording on the upper recording layer, performs the test writing on the test zone in the target recording  
5 layer.

17. A computer-readable storage medium having a program embodied therein for causing a computer, which makes a recording apparatus determine an optimum  
10 recording power value by performing test writing on a test zone of a recording medium and record information on the recording medium with the determined optimum recording power, wherein the recording medium is a multilayer recording medium having a plurality of  
15 recording layers within one recording surface, the test zone is formed on each recording layer, and the test zones in different recording layers are positioned so as not to overlap in a same recording surface area, to function as:

20 a preprocessing unit which, when recording information on a target recording layer that is second or further from a light source and information has already been recorded on an upper recording layer that is closer to the light source than the target recording  
25 layer, records information on a portion, which portion

is positioned in the same recording surface area as that of the test zone in the target layer, of the upper recording layer; and

5 a test writing unit which, after the recording on the upper recording layer, performs the test writing on the test zone in the target recording layer.

18. A computer-readable storage medium having  
10 a program embodied therein for causing a computer, which makes a recording apparatus determine an optimum recording power value by performing test writing on a test zone of a recording medium and record information on the recording medium with the determined optimum  
15 recording power, wherein the recording medium is a multilayer recording medium having a plurality of recording layers within one recording surface, the test zone is formed on each recording layer, and the test zones in different recording layers are positioned so as  
20 not to overlap in a same recording surface area, to function as:

a test writing unit which, when recording information on target recording layers one by one, performs the test writing on the test zone in the  
25 corresponding target recording layer before each

information recording; and

5 a preprocessing unit which, before performing the test writing on the test zone in each of the target recording layers that are second or further from a light source, records information on a portion, which portion is positioned in the same recording surface area as that of the test zone, of a respective upper recording layer that is closer to the light source than each of the target recording layers that are second or further from  
10 a light source.

19. The computer-readable storage medium having a program embodied therein as claimed in claim 17, wherein the test writing unit, when recording  
15 information on the target recording layer that is second or further from the light source and information has not been recorded on the upper recording layer that is closer to the light source than the target recording layer, performs the test writing on the test zone in the  
20 target recording layer without having the preprocessing unit record information on said portion.

20. The computer-readable storage medium having a program embodied therein as claimed in claim 16,  
25 wherein the preprocessing unit, in the information

recording on the upper recording layer closer to the light source than the target recording layer before the test writing on the target recording layer, records information only on a portion, which portion is used to  
5 perform the test writing once, of the test zone in the upper recording layer; and the test writing unit performs the subsequent test writing for the target recording layer on another portion, which other portion is positioned in a same recording surface area as that  
10 of said portion, of the test zone in the target recording layer.

21. The computer-readable storage medium having a program embodied therein as claimed in claim 16,  
15 wherein the preprocessing unit, in the information recording on the upper recording layer closer to the light source than the target recording layer before the test writing on the target recording layer, records information on an entire area of the test zone in the  
20 upper recording layer.

22. The computer-readable storage medium having a program embodied therein as claimed in claim 20 or 21, wherein the preprocessing unit, after recording  
25 information on the upper recording layer closer to the

light source than the target recording layer before the test writing on the target recording layer, records indicator information indicating a zone where said information has been recorded in a count zone of the  
5 recording medium.